DOCUMENT RESUME

ED 037 413 SP 003 708

AUTHOR	Lipe, Dewey; And Others
TITLE	Varieties of Student Behavior in Project PLAN.
INSTITUTION	Westinghouse Learning Corp., New York, N.Y.
PUB DATE	6 Mar 70
NOTE	21p.; Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, March, 1970
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.15
DESCRIPTORS	*Classroom Observation Techniques, *Individualized Instruction, Individualized Programs, Instructional Improvement, *Measurement Instruments, *Student Behavior, *Teacher Behavior, Teacher Education

ABSTRACT

The PLAN Student Observation Scale (PLAN-SOS) was developed to measure the percentage of time that students spend performing various behaviors judged to be important to the learning process in the system of individualized instruction upon which Project PLAN is based. An earlier document reported the use of this instrument in comparing PLAN students with students in other instructional systems. This document reports its use and adaptation in comparing various groupings within the set of PLAN classes--groupings based on grade-level, teacher experience in writing PLAN curriculum materials, and instructional organization (team vs. self-contained). The 20 categories of student behavior included in PLAN-SOS are clustered into seven groups which correspond to major emphases of the teacher training program, thus enabling the instrument to provide feedback directly relevant to the training and development of PLAN teachers. According to a systematic procedure of observation and analysis, paired and carefully trained observers (one focusing on students, the other on teachers) collected data in each of the classrooms under study. Results revealed no significant differences between PLAN groups in terms of the variety and kinds of activities engaged in and considered essential characteristics of the process of individualized instruction. (Also included are differences revealed by the instrument, although not at the statistically significant level, and an outline of the observer training program.) (JES)

ED037413

MAR 13 1970

VARIETIES OF STUDENT BEHAVIOR IN PROJECT PLAN

Dewey Lipe[1]

Title III
California Teacher
Development Project

Margaret T. Steen

Westinghouse Learning Corporation

Thomas J. Quirk[2]

American Institutes for Research

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Paper read at the annual meeting of the American Educational Research Association in Minneapolis, Minnesota, March 6, 1970. The major support for this research was contract 68-05331 with the Office of Education, U.S. Department of Health, Education, & Welfare, 1969.

[1]Now at Westinghouse Learning Corporation, Palo Alto, California

[2]Now at Educational Testing Service, Princeton, New Jersey.

SP003708

In order to assess the classroom behavior of PLAN students relative to students in other instructional systems, the PLAN Student Observation Scale (PLAN-SOS) was developed. The purpose of PLAN-SOS is to measure the precentage of time that students spend performing various behaviors judged to be important to the learning process in a system of individualized instruction.

Many student observation scales have been developed for a variety of specific uses. Some have been designed to record the occurrence of a circumscribed set of student classroom behavior such as attending behavior (Walker & Buckley, 1968), study behavior (Hall, Lund, & Jackson, 1968), and disruptive behavior (Thomas, Becker, & Armstrong, 1968). Other scales have been constructed to examine a broader group of behaviors. Spaulding, for example, developed "A Coping Analysis Schedule for Educational Settings" (CASES) to record both verbal and non-verbal behaviors in the affective domain (Simon & Boyer, 1967). Another scale was developed by Lindvall specifically for the observation of students in an individualized system of instruction (Simon & Boyer, 1967).

PLAN-SOS was designed to correspond to the training program for teachers of PLAN classes (see Steen, Quirk, and Lipe, 1969, for a description of the training program).

In an earlier paper (Lipe, Quirk, & Steen, 1969), comparisons between classrooms of PLAN and Control students were presented. It was found, as predicted, that PLAN students spent more time than Control students working alone on various learning activities, that PLAN students spent more time than Control students in individual instruction with their teachers, and that PLAN students spent more time than Control students in learning activities with their peers. Contrary to predictions, PLAN students did not

spend more time than Control students in planning and developing strategies to follow a Program of Studies.

The purpose of this paper is to present comparisons between various groupings within the set of PLAN classes. For comparison purposes classrooms are grouped by grade level, by teacher experience writing PLAN curriculum materials, and by instructional organization of the classroom, i.e., team vs. self-contained.

Brief Description of PLAN-SOS

Listed below are the 20 categories of the PLAN-SOS. They represent the end product of the development of mutually exclusive and exhaustive categories that observers may employ to reliably and usefully describe activities of PLAN students.

Student Behavior Categories

Category Description	Category Number	Example
WORKING ALONE ON		
Computer materials	(1)	The student fills out a computer request card.
Learning materials	(2)	The student checks off a TLU activity.
Learning equipment	(3)	The student is listening through earphones to a record.
Tests	(4)	The student is writing an essay answer to a test.
INTERACTING IN A GROUP		
Attending to the teacher	(5)	The student is watching the teacher work a problem.
Attending to a student	(6)	The student is attending to another student in the group who is asking a question.

Talking or performing	(7)	The observed student is answering a question asked by the group leader.
INTERACTING WITH THE TEACHER		
Content behavior (intra TLU)	(8)	The student asks the teacher for the meaning of a word in his TLU.
Process behavior (extra TLU)	(9)	The student answers the teacher's question about how far he has progressed in his Program of Studies.
Silent attending	(10)	The student listens to the teacher explain something to him.
INTERACTING WITH A PEER		
Content behavior (intra TLU)	(11)	The student asks another student how to work a math problem.
Process behavior (extra TLU)	(12)	The observed student tells another student where to find a book.
Silent attending	(13)	The observed student attends to another student who is asking a question.
PLANNING LEARNING STRATEGIES OR PROGRAM OF STUDIES	(14)	The student and teacher are discussing the student's Program of Studies.
TRANSITIONAL BEHAVIOR		
Walking	(15)	The student is walking from his desk to the bookcase.
Waiting for the teacher	(16)	The student is standing in line at the teacher's desk.
Other waiting	(17)	The student is waiting to use a tape recorder.
Locating or organizing materials and equipment	(18)	The student is putting earphones on his head.
NON-PRODUCTIVE BEHAVIOR		
Interacting	(19)	The student is describing to another student the details of a TV program.
Not interacting	(20)	The student is gazing out the window.

The 20 categories of PLAN-SOS are clustered into seven groups which correspond to the major emphases of the teacher training program. These include training teachers to teach children how to manage their own classroom behavior (Categories 1, 2, 3, 4, 11, 12, 13, and 18), training teachers how to work with small groups of children (Categories 5, 6, and 7), training teachers how to work individually with children (Categories 8, 9, and 10), and training teachers how to teach children to plan their own studies (Category 14). Categories nine and 12, "Process Behavior," represent tutoring sessions which focus on problems of organizing the student's work and preparing for the learning activities. Categories 8 and 11, "Content Behavior," represent tutoring sessions which focus on problems of the actual learning activities themselves.

Training Classroom Observers to Use the Scale

Four observers were trained to use the PLAN-SOS and the training procedure was replicated with a second group of four observers. All observers in both groups were women. Those in the first group ranged in age from 23 to 35; their education ranged from one year of college to one and one-half years of graduate study. Two had had no teaching experience, one had taught three years in public school and one observer had taught five years. The second group ranged in age from 25 to 41. One had attended college for three years and the other three each had earned a Bachelor's Degree. The number of years teaching experience represented in the group was none, one, two, and four years.

A brief outline of the training program is presented in Table 1. The objective of the observer training was to attain inter-observer reliability of .85 or better as quickly and economically as possible. Observers were given extensive practice categorizing first written narratives describing student

behavior and then observing and categorizing actual student classroom behavior. Training included frequent assessment of observer progress and feed-back regarding observer successes and solutions to observation problems. Observers were given practice in all levels of PLAN classes and also in all corresponding levels of non-PLAN classes.

Following the training of each group a reliability study of the instrument was conducted. Scott's π was employed as the statistic to assess reliability (Flanders, 1967). Reliabilities of Group I observers are presented in Table 2 and those of Group II observers are presented in Table 3.

Data Collection

For a complete description of the observed population see the paper by Quirk, Steen, and Lipe (1969). The distribution of Project PLAN classes is presented in Table 4.

Each classroom of this study was observed on three separate occasions each for 20 minutes to provide a total of one hour's observation on each class of students. A pair of observers entered each classroom. One member of the pair observed and recorded teacher behavior; the other observed and recorded student behavior. The student observer systematically scanned the classroom, observed and recorded the behavior of a different student every five seconds until every student's behavior had been recorded once, and then rescanned the classroom observing every student a second time. This process was repeated for the duration of the 20 minute observation period.

Data Analyses

Comparisons among groups of classrooms within PLAN are presented in Tables

5-10. The tables show the percentage of time spent in all 20 categories of behavior and in six grouped categories. Mann-Whitney U values were computed for those categories in which the differences between percentages of a pair of comparison groups were five percent or greater. In the comparisons among three groups, Kruskal-Wallis H values were computed for the categories in which the difference of any pair of groups was five percent or greater. Since there were no predictions regarding the directionality of differences, two tailed tests were applied to the U and H values.

Comparison of PLAN Students: Primary vs. Intermediate vs. Secondary Levels

Tables 5 and 6 present the data comparing levels of PLAN students. The Kruskal-Wallis H test was significant regarding category 3, category 18, the combined Transitional category (15+16+17+18), and the combined Non-productive category (19+20). In category 3, Working Alone on Learning Equipment, primary level PLAN students spent significantly more time than intermediate level PLAN students and the latter spent significantly more time than secondary level PLAN students. In category 18, Locating and Organizing Materials and in the combined category for Transitional behavior (15+16+17+18), both primary level students and intermediate level students spent significantly more time than secondary level students. Secondary students, however, spent significantly more time than both intermediate level students and primary level students in category 19, Non-productive behavior (19+20).

An interesting finding in this section regards the inverse relationship between the amount of time spent working alone on learning equipment and level of PLAN student. The higher the level of the students, the less time was spent working alone on learning equipment. There is no basis at this time,

however, for presenting as a future hypothesis that this relationship is generally true. The finding that secondary level students spent more time than the lower levels of students in non-productive behavior, on the other hand, has guided the emphases and direction of the teacher training during the current year. Likewise, the current teacher development program includes new techniques for reducing the amount of time all levels of students spend locating and organizing materials and in other transitional behavior.

Comparison of PLAN Students: Level One vs. Level Two

Level one students were experiencing their first year in school as well as their first year in PLAN. Level two students, in addition to experiencing their second year of school, were, in many cases, also experiencing their second year in PLAN. Comparisons between PLAN level one and level two students are presented in Table 7. The only significant difference was that level one students spent more time than level two students working alone on learning equipment.

Comparison of PLAN Students: Students of First Year PLAN Teachers vs. Students of Second Year PLAN Teachers (all levels)

Thirty-six of the teachers in 1968-69 PLAN classes were in their first year of PLAN teaching and twenty-two were teaching PLAN for their second year. The comparison of first year PLAN teachers with second year PLAN teachers are presented in Table 8. In none of the categories are the differences between groups equal to or greater than five percent. No tests of group differences, therefore, were applied.

Comparison of PLAN Students: Students of AIR-PLAN Teachers vs. Students of non-AIR-PLAN Teachers

In the development phase of Project PLAN participating school districts each year send teachers to AIR in Palo Alto to write curriculum materials for those grade levels that will be added to the project the following year. We wanted to know whether spending a year writing curriculum materials would influence the effect teachers had on student behavior in PLAN classes as measured by the SOS.

Comparisons between those groups of teachers are presented in Table 9 and none are significant.

Comparison of PLAN Students: Students of Team Teachers vs. Students in Self-Contained Classrooms (Primary and Intermediate Level Students Combined)

At the primary and intermediate levels, 26 PLAN teachers worked in teams sharing responsibilities for their combined classrooms. The other 16 teachers at those grade levels taught in self-contained classrooms.

The comparisons between students of team teachers and students in self-contained classrooms are presented in Table 10. Again there were no categories in which differences between groups equalled or exceeded five percent and, therefore, no test of significance was applied.

Discussion

It is noteworthy that many of the comparisons between groups of students within PLAN were not significant. Primary, intermediate, and secondary students, for example, did not significantly differ in the amount of time spent working

alone, interacting in a group, interacting with the teacher, or interacting with peers. None of the comparisons on two dimensions of teacher experience yielded any differences in measured student classroom behavior. And, finally, the distributions of student activities were almost identical in classrooms of team teachers as in self-contained classrooms.

On one of the assessed dimensions of teacher experience, i.e., whether or not the teacher has spent a year at AIR writing PLAN curriculum materials, the lack of differences perhaps can be attributed to the lack of similarity between curriculum writing skills and teaching skills. Even though a teacher has spent a year writing PLAN Teaching-Learning-Units in one subject area to be used in his classroom the following year, he is not necessarily going to be better prepared than other teachers to teach students in all four subject areas of PLAN. It should also be pointed out that, at the time of the observations, all teachers had had almost eight months experience teaching PLAN classes. Even though differences between groups were not identified to exist in the spring of the school year, it is possible that such differences did exist the previous fall. The intensive inservice training of individual teachers by field consultants in areas of each teacher's special needs also may have been a factor in eliminated differences if difference had existed earlier in the year.

It is by definition a characteristic of an individualized classroom that a variety of activities be occurring at any one time. If students' needs differ, then it is to be expected that learning activities in accordance with those needs also will differ. The wide variety of activities commonly occuring in any one PLAN classroom at one time also may contribute to the lack of significant differences between groups of classrooms. It is well documented that a wide range of measured abilities is typically represented in a school's grade level.

The areas where differences were found between compared groups have served to guide the emphases of the training program for PLAN teachers this academic year.

REFERENCES

Flanders, N. A. The problems of observer training and reliability. In E. J. Amidson and J. B. Hough (Eds.), Interaction analysis: Theory, research and application. Palo Alto: Addison-Wesley, 1967. Pp. 158-166.

Hall, R. V., Lund, D., & Jackson, D. Effects of teacher attention on study behavior. Journal of Applied Behavior Analysis, 1968, 1, 1-12.

Quirk, T. J., Steen, M. T. & Lipe, D. The development of the PLAN-TOS: A teacher observation scale for individualized instruction. Paper read at the annual meeting of the American Psychological Association in Washington D.C., September 1, 1969.

Simon, A., & Boyer, E. G. (Eds.) Mirrors for behavior. Philadelphia, Pa.: Research for Better Schools, Inc., 1967.

Steen, M. T., Lipe, D., & Quirk, T. J. A program of teacher development for a system of individualized education. Paper presented at the annual meeting of the American Psychological Association in Washington D.C., September 1, 1969.

Thomas, D. R., Becker, W. C. & Armstrong, M. Production and elimination of disruptive classroom behavior by systematically varying teacher's behavior. Journal of Applied Behavior Analysis, 1968, 1, 35-46.

Walker, H. M., & Buckley, N. K. The use of positive reinforcement in conditioning attending behavior. Journal of Applied Behavior Analysis, 1968, 1, 245-252.

Table 1

Brief Outline of the Observer Training Program

I. Pre-training Orientation Session (about two hours)
   A. Complete the "First Practice Trials Categorizing Student and Teacher Behavior".
   B. Read "Operational Definitions of Student Behavior Categories".
   C. Peruse materials describing Project PLAN.

II. Orientation to Project PLAN Classrooms (about one-half day)
   A. Take a clip board with stop watch and observation forms.
   B. In several PLAN classrooms the trainer will point out examples of the student behavior categories as they occur.

III. Simulated Practice (about one-half day)
   A. Practice categorizing written examples of student behavior.
   B. Practice tallying responses and computing Scott's π.

IV. Practice Observation with Frequent Feed-back (as needed)
   A. In pairs, in a functioning classroom, discuss student behavior (about five minutes).
   B. Independently categorize student behavior (two minutes).
   C. Compare and discuss categorization decisions.
   D. Repeat B and C for about 20 minutes.
   E. Outside the classroom discuss unresolved questions and problems with the trainer.

V. Trial Reliability (as needed)
   A. In pairs, independently observe students in diverse classrooms for about 20 minutes each.
   B. Computer observer reliability in each classroom.

VI. Formal Reliability Study of the Instrument

Table 2

Observer Reliability

PLAN-SOS

Group I

Grade Level Observed	Observer Pair	Scott's π			
		Project PLAN classes		Traditional classes	
Primary (Grades 1 & 2)	A-B	.96	.92	.86	.96
	C-D	.93	.99	.73	.88
Intermediate (Grades 4, 5, & 6)	A-C	.95	.76	.95	.90
	B-D	.98	.82	.96	.60
Secondary (Grades 9 & 10)	A-D	.95	.88	.86	.93
	B-C	.53	.98	.89	.95

Table 3

Observer Reliability

PLAN-SOS

Group II

Grade Level Observed	Observer Pairs	Scott's π	
		Project PLAN classes	Traditional classes
Primary (Grades 1 & 2)	A-B	.88 .82	.74 .72
	C-D	.90 .97	.98 .91
Intermediate (Grades 4, 5, & 6)	A-C	.93 .81	.89 .95
	B-D	.93 .93	.93 .93
Secondary (Grades 9 & 10)	A-D	.80 .74	.00 .86
	B-C	.90 .93	.64 .67

Table 4

Distribution of Project PLAN and Control Classrooms

	Number of Elementary Classrooms by Grade Level				Number of Secondary Classrooms by Subject Taught				
	1	2	5	6	English	Social Studies	Math	Science	Total
Project PLAN Classrooms									
Number of Classrooms	12	12	12	12	5	5	4	4	66
Number Observed for One Hour	10	11	10	11	4	5	4	3	58
Control Classrooms									
Number Randomly Selected	5	5	5	5	3	3	3	3	32
Number Observed for One Hour	4	4	5	5	2	3	2	3	28

Table 5

Comparison of PLAN Students: Primary vs. Intermediate vs. Secondary

Category	Frequency	Percent	Frequency	Percent	Frequency	Percent	Kruskal-Wallis
	PLAN Primary Students (N=21 classrooms)		PLAN Intermediate Students (N=21 classrooms)		PLAN Secondary Students (N=16 classrooms)		
Working Alone							H
1. Comp. mat.	4	0.02	85	0.56	218	1.89	
2. Learn. mat.	5393	35.66	5742	37.97	3724	32.32	1.25
3. Learn. equip.	1013	6.69	544	3.59	155	1.34	18.54**
4. Tests	65	0.42	596	3.94	353	3.06	
Interacting in a Group							
5. Attend. to tch.	907	5.99	670	4.43	1122	9.73	3.05
6. Attend. to stud.	313	2.07	313	2.07	620	5.38	
7. Talk. or perf.	176	1.16	109	0.72	116	1.00	
Interacting with Teacher							
8. Content beh.	258	1.70	147	0.97	89	0.77	
9. Process beh.	51	0.33	45	0.29	43	0.37	
10. Sil. att.	488	3.22	422	2.79	246	2.13	
Interacting with Peers							
11. Content beh.	553	3.65	574	3.79	543	4.71	
12. Process beh.	56	0.37	48	0.31	29	0.25	
13. Sil. att.	395	2.61	421	2.78	367	3.18	
Other							
14. Plan. learn. strat.	19	0.12	9	0.05	18	0.15	ties large
Transitional							
15. Walking	1628	10.76	1574	10.41	680	5.90	
16. Wait. for tch.	537	3.55	561	3.71	258	2.23	
17. Other wait.	46	0.30	33	0.21	37	0.32	
18. Loc. or org. mat.	1630	10.78	1667	11.02	646	5.60	22.14**
Non-productive							
19. Interacting	978	6.46	983	6.50	1749	15.18	12.20**
20. Not interacting	610	4.03	577	3.81	507	4.40	
Alone (1+2+3+4)	6475	42.82	6967	46.07	4450	38.62	2.88
Group (5+6+7)	1396	9.23	1092	7.22	1858	16.12	2.15
Teacher (8+9+10)	797	5.27	614	4.06	378	3.28	
Peer (11+12+13)	1004	6.64	1043	6.89	939	8.15	2.63
Trans. (15+16+17+18)	3786	25.03	3835	25.36	1621	14.07	27.3**
Non-prod. (19+20)	1643	10.86	1560	10.31	2256	19.58	8.86*
TOTAL (1 through 20)	15120		15120		11520		

*p<.05
**p<.01

Table 6

Comparison between Levels of PLAN Classrooms on categories for which the overall Kruskol-Wallis H Tests were Significant

Category	Mann-Whitney U Test (two tailed)					
	Primary Level vs. Intermediate Level		Intermediate Level vs. Secondary Level		Primary Level vs. Secondary Level	
	U	Z	U	Z	U	Z
3. Working Alone on Learning Equipment	132	2.23*	72	2.94**	40	3.92**
18. Locating and Organizing Materials	218.5	0.05	22	4.48**	41.5	3.88**
19. Non-productive Interaction	212	0.21	68	3.07**	64.5	3.17**
Total Transitional (15&16&17&18)	210.5	0.25	6	4.97**	27.5	4.31**
Total Non-Productive (19&20)	199	0.54	78	2.76**	85.5	2.53*

*p < .05
**p < .01

Table 7

Comparison of PLAN Primary Students: Level 1 vs. Level 2

Category	Student Observation Scale				
	Frequency	Percent	Frequency	Percent	Mann-Whitney
	PLAN Level 1 (N=10 classrooms)		PLAN Level 2 (N=11 classrooms)		
Working Alone					U
1. Comp. mat.	1	0.01	3	0.03	
2. Learn. mat.	2450	34.02	2943	37.16	
3. Learn. equip.	703	9.76	310	3.91	22*
4. Tests	14	0.19	51	0.64	
Interacting in a Group					
5. Attend. to tch.	334	4.63	573	7.23	
6. Attend to stud.	150	2.08	163	2.05	
7. Talk. or perf.	85	1.18	91	1.14	
Interacting with Teacher					
8. Content beh.	150	2.08	108	1.36	
9. Process beh.	25	0.34	26	0.32	
10. Sil. att.	253	3.51	235	2.96	
Interacting with Peers					
11. Content beh.	274	3.80	279	3.52	
12. Process beh.	24	0.33	32	0.40	
13. Sil. att.	191	2.65	204	2.57	
Other					
14. Plan. learn. strat.	0	0.00	19	0.23	
Transitional					
15. Walking	793	11.01	835	10.54	
16. Wait. for tch.	230	3.19	307	3.87	
17. Other wait.	22	0.30	24	0.30	
18. Loc. or org. mat.	755	10.48	875	11.04	
Non-productive					
19. Interacting	413	5.73	565	7.13	
20. Not interacting	333	4.62	277	3.49	
Alone (1+2+3+4)	3168	44.00	3307	41.75	
Group (5+6+7)	569	7.90	827	10.44	
Teacher (8+9+10)	428	5.94	369	4.65	
Peer (11+12+13)	489	6.79	515	6.50	
Trans. (15+16+17+18)	1800	25.00	1986	25.07	
Non-prod. (19+20)	746	10.36	897	11.32	
TOTAL (1 through 20)	7200		7920		

*p<.05
**p<.01

Table 8

Comparison of Students of First Year PLAN Teachers with Students of Second Year PLAN Teachers (all Levels)

Category	Student Observation Scale			
	Frequency	Percent	Frequency	Percent
	Students of First Year PLAN Teachers (N=36 classrooms)		Students of Second Year PLAN Teachers (N=22 classrooms)	
Working Alone				
1. Comp. mat.	265	1.02	42	0.26
2. Learn. mat.	8960	34.56	5899	37.24
3. Learn. equip.	1168	4.50	544	3.43
4. Tests	599	2.31	415	2.61
Interacting in a Group				
5. Attend. to tch.	1912	7.37	787	4.96
6. Attend to stud.	830	3.20	416	2.62
7. Talk. or perf.	300	1.15	101	0.63
Interacting with Teacher				
8. Content beh.	318	1.22	176	1.11
9. Process beh.	94	0.36	45	0.28
10. Sil. att.	728	2.80	428	2.70
Interacting with Peers				
11. Content beh.	1095	4.22	575	3.63
12. Process beh.	61	0.23	72	0.45
13. Sil. att.	770	2.97	413	2.60
Other				
14. Plan. learn. strat.	24	0.09	22	0.13
Transitional				
15. Walking	2349	9.06	1533	9.67
16. Wait. for tch.	853	3.29	503	3.17
17. Other wait.	89	0.34	27	0.17
18. Loc. or org. mat.	2307	8.90	1636	10.32
Non-productive				
19. Interacting	2220	8.56	1490	9.40
20. Not interacting	978	3.77	716	4.52
Alone (1+2+3+4)	10992	42.40	6900	43.56
Group (5+6+7)	3042	11.73	1304	8.23
Teacher (8+9+10)	1140	4.39	649	4.09
Peer (11+12+13)	1926	7.43	1060	6.69
Trans. (15+16+17+18)	5598	21.59	3645	23.01
Non-prod. (19+20)	3198	12.33	2260	14.26
TOTAL (1 through 20)	25920		15840	

*p<.05
**p<.01

Table 9

Comparison of Students of AIR PLAN Teachers with Students of non-AIR PLAN Teachers (all Levels)

Category	Student Observation Scale					
	Frequency	Percent	Frequency	Percent	Mann-Whitney	
	Students of AIR PLAN Teachers (N=22 classrooms)		Students of non-AIR PLAN Teachers (N=36 classrooms)			
Working Alone					U	z
1. Comp. mat.	54	0.34	253	0.97		
2. Learn. mat.	6317	39.88	8542	32.95	291	1.68
3. Learn. equip.	722	4.55	990	3.81		
4. Tests	358	2.26	656	2.53		
Interacting in a Group						
5. Attend. to tch.	715	4.51	1984	7.65		
6. Attend to stud.	305	1.92	941	3.63		
7. Talk. or perf.	118	0.74	283	1.09		
Interacting with Teacher						
8. Content beh.	193	1.21	301	1.16		
9. Process beh.	48	0.30	91	0.35		
10. Sil. att.	471	2.97	685	2.64		
Interacting with Peers						
11. Content beh.	586	3.69	1084	4.18		
12. Process beh.	67	0.42	66	0.25		
13. Sil. att.	442	2.79	741	2.85		
Other						
14. Plan. learn. strat.	9	0.05	37	0.14		
Transitional						
15. Walking	1459	9.21	2423	9.34		
16. Wait. for tch.	521	3.28	835	3.22		
17. Other wait.	53	0.33	63	0.24		
18. Loc. or org. mat.	1576	9.94	2367	9.13		
Non-productive						
19. Interacting	1203	7.59	2507	9.67		
20. Not interacting	623	3.93	1071	4.13		
Alone (1+2+3+4)	7451	47.03	10441	40.28	274.5	1.95
Group (5+6+7)	1138	7.18	3208	12.37	322	1.19
Teacher (8+9+10)	712	4.49	1077	4.15		
Peer (11+12+13)	1095	6.91	1891	7.29		
Trans. (15+16+17+18)	3555	22.44	5688	21.94		
Non-prod. (19+20)	1880	11.86	3578	13.80		
TOTAL (1 through 20)	15840		25920			

*p<.05
**p<.01

Table 10

Comparison of PLAN Students of Teachers in Team Teaching vs. Self-Contained Classrooms (Primary and Intermediate Level Students Combined)

Category	Student Observation Scale			
	Frequency	Percent	Frequency	Percent
	PLAN Students in Team Teaching Classes (N=26 classrooms)		PLAN Students in Self-Contained Classes (N=16 classrooms)	
Working Alone				
1. Comp. mat.	67	0.35	22	0.19
2. Learn. mat.	6916	36.94	4219	36.62
3. Learn. equip.	903	4.82	654	5.67
4. Tests	538	2.87	123	1.06
Interacting in a Group				
5. Attend. to tch.	922	4.92	655	5.68
6. Attend to stud.	306	1.63	320	2.77
7. Talk. or perf.	122	0.65	163	1.41
Interacting with Teacher				
8. Content beh.	257	1.37	148	1.28
9. Process beh.	67	0.35	29	0.25
10. Sil. att.	579	3.09	331	2.87
Interacting with Peers				
11. Content beh.	583	3.11	544	4.72
12. Process beh.	61	0.32	43	0.37
13. Sil. att.	425	2.27	391	3.39
Other				
14. Plan. learn. strat.	27	0.14	1	0.00
Transitional				
15. Walking	1995	10.65	1207	10.47
16. Wait. for tch.	749	4.00	349	3.02
17. Other wait.	49	0.26	30	0.26
18. Loc. or org. mat.	2020	10.79	1277	11.08
Non-productive				
19. Interacting	1260	6.73	701	6.08
20. Not interacting	874	4.66	313	2.71
Alone (1+2+3+4)	8424	45.00	5018	43.55
Group (5+6+7)	1350	7.21	1138	9.87
Teacher (8+9+10)	903	4.82	508	4.40
Peer (11+12+13)	1069	5.71	978	8.48
Trans. (15+16+17+18)	4813	25.71	2809	24.38
Non-prod. (19+20)	2134	11.39	1068	9.27
TOTAL (1 through 20)	18720		11520	

*p<.05
**p<.01